

## TELFAIRIA OCCIDENTALIS MODULATES GLUCOSE UPTAKE, SATIETY AND ENERGY BALANCE IN HIGH-FAT DIET/STREPTOZOTOCIN-INDUCED DIABETIC RATS

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*Telfairia occidentalis* has been shown to possess anti-diabetic effect. However, the mechanisms involved in its anti-diabetic effect are poorly understood. The present study evaluated the effect of acetone extract of the leaves of *Telfairia occidentalis* (ACET) on insulin indices, glucose transporters, leptin, and glucagon-like peptide 1 (GLP-1) in diabetes. Thirty (30) male Wistar rats (180-210 g) were randomized equally into six groups; Normal control, Diabetic control, and diabetic rats that received 5 mg/kg Glibenclamide (GLI-5), 100, 200 and 600 mg/kg ACET, respectively for 14 days. Type 2 diabetes was induced by high-fat diet and streptozotocin at 50 mg/kg. Serum, liver, and skeletal muscle were evaluated for glucose uptake and energy expenditure parameters, using standard procedures. Results showed significant ( $p < 0.01$ ) increases in serum insulin, HOMA- $\beta$ , insulin sensitivity index (ISI), hepatic GLUT-2 and glucokinase activity; and a decrease in HOMA-IR in diabetic rats that received GLI-5 and ACET at 100 and 600 mg/kg. All the treatments increased GLP-1 in diabetic rats. Remarkably, the skeletal muscle GLUT-4 level was elevated by 100 and 600 mg/kg of ACET, but not GLI-5. Similarly, Only ACET at 100, 200, and 600 mg/kg increased leptin levels in treated diabetic rats, while GLI-5 did not. The results suggest that the anti-diabetic mechanisms of *Telfairia occidentalis* include improvement in glucose uptake and energy balance by modulation of insulin sensitivity,  $\beta$ -cell function, glucose transport, satiety and incretin effects.

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